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26 January 1961

PROJECT ASSISTANCE
WORK ORDER 3618

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I. INTRODUCTION

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In order to answer the questions posed in the request for technical assistance to the [REDACTED] Project in setting standards for paper, pens, carbons and typing required for the best results, this Laboratory picked 35 sheets of various typewritten matter consisting of memorandums, dispatches, cables and reports from the many that were provided us by [REDACTED] for use as test copies to determine the photographic results possible from the varying degrees of light and dark typing, colored papers, etc. When our photographic set-up produced the same results as those of the present [REDACTED] photo set-up, the negatives were evaluated on a densitometer and contrasts between the message and background were read in percentages of light transmittance. A standard was determined regarding the minimum contrast and legibility which would be acceptable. Once this standard was set, we proceeded with the testing of the various papers, carbon sheets and forms that are presently in stock.

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II. METHODS AND ITEMS TESTED

A message was typed on all of the different stock papers supplied us and on dispatch and cable papers. Also, the different stock carbon papers were used in combination with all of the papers. Colored papers were switched around in their sequence after the original. The typing was done on a Royal manual typewriter with no touch control. The type was clean and the ribbon slightly used. The negatives of these copies were then evaluated by densitometer and checked against the standard decided upon earlier. The first elimination was based upon legibility of the message on the negative. The remaining negatives were then separated into seven groups as follows: Dispatch forms; Office Memo form as original with Letterax second sheets; Government bond papers with tissue and standard medium carbon; Cable papers with hard finish light weight carbon; Cable papers with standard black carbon; Office memo form as original with Letterax second sheets in a different sequence than before; Government bond with a hard finish light weight carbon and tissues.

III. CONCLUSION

On the tests mentioned above and the results thereof, our final observations and recommendations are based. Detailed charts and figures are available if they are desired. The results of our findings are attached hereto as a separate report.

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FINDINGS AND RECOMMENDATIONS
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TYPEWRITER REQUIREMENTS

1. Where touch control is available, a heavy touch should be used to obtain as dark a copy as possible.

2. Pica type is satisfactory. Elite type should be avoided. The best is IBM Executive with code 21 Bookface Academic or code 43, large Bookface type. The ideal would be, in new machines, code 03, Pica Gothic single case; code 08, Medium Roman Gothic; code 20, Special Gothic; code 48, Accounting Gothic; code 74, Manifold #9; code 86, Artisan #10. The above are most desirable in the descending order given.

3. The typewriter type must be cleaned whenever the lower case "a", "e" or "s" shows the slightest sign of filling in with a gray tint in the open areas. Slightly too much touch will also cause this condition and lessening of the touch pressure should be tried first. If the letters become gray or broken when pressure is lessened, then clean the type and use more pressure.

*Carbon ribbon
up from desk
cleaning.*

4. The ribbon should be either medium or dark (heavy) with little wear. It is almost impossible to say when a ribbon should be changed; this will have to be left to the judgment of the typist. If the ribbon is worn, then the first carbon copy should be used as the one to be photographed. Fresh carbon paper should always be used. Needless to say, a black copy is the most desirable. Tests show that in many cases, the first or second carbon gives better photographic results than do the originals.

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OBSERVATIONS REGARDING PAPER AND CARBONS NOW IN STOCK

1. **PAPERS**

- a. Dispatch form papers are all suitable for [REDACTED] photography.
- b. Office Memorandum form #64 in white or blue is suitable.
- c. Government Bond papers as follows:
 - 1. One star white 20# bond is all right.
 - 2. Yellow and blue tissue sheets are good for first or second carbons.
 - 3. Pink and green tissues are not desirable and should be avoided.

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d. Cable papers/

d. Cable Papers:

1. Only the white, as an original, is suitable.
2. The paper is too heavy and stiff to render good carbon copies.
3. The yellow can be used as an original but should be avoided when possible.
4. All the other colors are too dark to be desirable. Legibility becomes poor on the negative.

e. Letterex, one-time carbon sheets with tissue:

1. The white and yellow are very good, rendering a clean clear message, easy to photograph.
2. The green paper is too dark in color and should not be used.

2. CARBON PAPERS

- a. The standard weight medium black gives excellent results with a manual typewriter and no touch control. In many cases, the first carbon from this paper resulted in a better copy photographically than did the original. It produced better contrast in the negative.
- b. The light weight, hard finish, gives surprisingly poor results, despite its light weight. The carbon deposited on the paper is too gray to give good photographic results. It does not afford sufficient contrast to render a good negative. This carbon paper should not be used.
- c. Letterex, one-time carbon is well suited for photo reproduction. The results are clean and black even to the third carbon when the white paper is used in this position.
- d. Dispatch form carbons are very good. When a manual typewriter with clean type is used, even the fifth

carbon is/

2. d. carbon is satisfactory for reproductions. The letters are slightly filled in but the copy is usable.

3. BALL POINT PENS

Of the five ball points in stock that were tested, the best for reproduction is the Ballerina Blue. Farber Green is also well suited in most cases. The following gives the breakdown:

- a. Ballerina Red: Poor to fair results. Good results were obtained on cable papers only. Fair results were obtained on Dispatch blue, blue Office Memo, white one-time carbon, 20# white Government bond, blue tissue and pink cable papers. All other papers show poor results and this red should not be used on them.
- b. Ballerina Blue: Good to very good on all papers tested. This pen renders the best results.
- c. Farber Green: This color pen was poor on green one-time carbon and green tissue. Other than these two it was good in the majority of the remainder. This color is satisfactory except on green papers mentioned above.
- d. Venus Blue (desk pen set): This color pen is poor in all cases except on cable paper where it is fair on the blue paper and good on the rest of the colors.
- e. Scripto Black: This is a very disappointing pen. It resulted in only fair copy on three of the five cable papers and poor on everything else. The ink just isn't black enough to photograph well despite the fact that it is called "reproduction black."

GENERAL OBSERVATIONS AND RECOMMENDATIONS

All papers now in stock, with the exception of the dark green and dark pink, are suitable for the type of negative desired for the [REDACTED] project. The major effort should be applied to educating the typists on how to obtain a good dark clear copy. The tests conducted showed that, in most cases, a better copy was obtained from the first and second carbon copies when the standard carbon paper was used than was obtained from the original, even though pains were taken to turn out a clean black copy on the original. Technical readings showed the negatives of the carbon copies were better in contrast. If not too stiff a paper is used for the original, the carbons will come out clear and clean. The cable papers were poor for typing but good for the ball point pens. Their stiffness and thickness prevents the

type from/

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type from making a clean impression through them. The more pressure applied (heavier touch), the more the letters fill in. Fresh carbon paper should always be used because as the carbon carrier becomes older, it does not release as much carbon. This results in a weak or gray copy. Also, a new carbon should be used to make sure that there are no missing portions of letters from lack of carbon being transferred to the paper from a used sheet of carbon paper.

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If the [redacted] copy (that which is to be photographed) must be on colored paper, it should be on the yellow (canary), blue or very light pink tissue as a first carbon. On the dispatch forms, it could be the third carbon if required since all five carbons render a photographically suitable copy. However, it is wisest to use one of the first three carbons only. This will introduce a safety factor should the typing not be up to standard or the dispatch form carbons be old, etc.

As for the ball point pens, it is advisable to use only the Ballerina blue and the Ferber green pens for notations on typed matter. The red pen must be of a darker hue to come up to a suitable photographic standard.

When ordering new stocks of paper, any of the white papers which are now stocked are suitable. In the tissue papers used as second sheets, all the present colors are satisfactory; if used as first or second carbon, they should not be any darker in shade than at present though. The Letterex one-time carbons have satisfactory shades of colored paper except for the green which should be a much lighter shade but the same applies to them as to the tissues. The cable papers, if they are to be used, should be of the same shades as the tissues and not nearly as dark as they are now. On the whole, the cable papers are not satisfactory and should be avoided if their properties cannot be changed because of their original use characteristics.

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[redacted]
Technical Services Laboratory, TSD

Distribution:

- Orig. & 2 - A/C, Man. Analysis Staff
- 1 - TSD
- 1 - TSL
- 2 - [redacted]

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